CLAIMS

1. A method of determining the details of dynamic autonomic nervous system function from the measured variability of heart activity occurring during a time period approximating the inverse of the lowest frequency component of the heart rate variability chosen for analysis, comprising the steps of:

sequentially receiving data points of heart activity data over a period of time corresponding to the said time period of the heart activity;

evaluating said data points as sequentially received to determine QRS events;

outputting said QRS events to a processor as they are sequentially determined;

processing said output QRS events using time-frequency, nonlinear, nonstationary analysis methods as they are output to periodically determine autonomic nervous system information, wherein said autonomic nervous system information is based on a selected number of output QRS events corresponding to the said selected time period; and

periodically redetermining said autonomic nervous system information using at least some subsequently output QRS events; and

during said period of time corresponding to the time period of the heart activity, displaying the most recently determined autonomic nervous system information.

2. The method of Claim 1, wherein the said period of time selected is 30 seconds for humans.

3. A method of determining the details of dynamic autonomic nervous system function from the measured variability of heart activity occurring during a time period approximating the inverse of the lowest frequency component of the heart rate variability chosen for analysis, comprising the steps of:

sequentially receiving data points of heart activity data over a period of time corresponding to the said time period of the heart activity;

evaluating said data points as sequentially received to determine QRS events;

outputting said QRS events to a processor as they are sequentially determined;

processing said output QRS events using time-frequency, nonlinear, nonstationary analysis methods as they are output to repeatedly determine one or more of a sympathetic index, a parasympathetic index, and a chaotic index of a selected group of determined QRS events; and

during said period of time corresponding to the time period of the heart activity, displaying the most recently determined one or more of the sympathetic index, parasympathetic index, and chaotic index.

4. The method of Claim 3, wherein the said period of time selected is 30 seconds for humans.

5. A method of determining the details of dynamic autonomic nervous system function from the measured variability of heart activity occurring during a time period approximating the inverse of the lowest frequency component of the heart rate variability chosen for analysis, comprising the steps of:

sequentially receiving data points of heart activity data over a period of time corresponding to the time period of the heart activity;

evaluating said data points as sequentially received to determine QRS events;

outputting said QRS events to a processor as they are sequentially determined;

processing a selected number of QRS events to determine a time-frequency distribution, wherein said determined time-frequency distribution is updated using the most recently output selected number of QRS events;

processing the most recently determined time-frequency distribution to determine its spectral power in a low frequency range and its spectral power in a high frequency range of the t-f distribution; and

displaying the most recently determined spectral power in the low frequency range and the spectral power in the high frequency range.

6. The method of Claim 5, wherein said period of time selected is 30 seconds for humans.

7. The method of claim 5, displaying the ratio of the most recently determined spectral power in the low frequency range to the most recently determined spectral power in the high frequency range.

8. The method of claim 5, wherein the low frequency range is 0.04 Hz to 0.15 Hz for humans

9. The method of claim 5, wherein the high frequency range is 0.15 Hz to 0.4 Hz for humans

10. A method of determining the details of dynamic autonomic nervous system function from the sympathetic index, the parasympathetic index, and the chaotic index determined from the measured variability of heart activity occurring during a time period approximating the inverse of the lowest frequency component of the heart rate variability chosen for analysis, comprising the steps of:

sequentially receiving data points of heart activity data over a period of time corresponding to the time period of the heart activity;

evaluating said data points as sequentially received to determine QRS events;

outputting said QRS events to a processor as they are sequentially determined;

processing said output QRS events using nonlinear, nonstationary methods as they are output to repeatedly determine one or more of a sympathetic index, a parasympathetic index, and a chaotic index of a selected group of determined QRS events;

during said period of time corresponding to the time period of the heart activity, displaying the most recently determined one or more sympathetic index, parasympathetic index, and chaotic index;

processing a selected number of QRS events to determine a time-frequency distribution, wherein said determined time-frequency distribution is updated using the most recently output selected number of QRS events;

displaying the most recently determined time-frequency distribution;

processing the most recently determined time-frequency distribution to determine its spectral power in a low frequency range and its spectral power in a high frequency range of the t-f distribution; and

displaying the most recently determined spectral power in the low frequency range and the spectral power in the high frequency range.

11. The method of Claim 10, wherein said data points of heart activity data are received during the heart activity.

12. The method of Claim 10, wherein said data points of heart activity data are received from a pre-acquired file of data points of the heart activity.

13. The method of Claim 11, wherein said period of time selected is 30 seconds for humans.

14. A system for determining the details of dynamic autonomic nervous system function from the measured variability of heart activity occurring during a time period approximating the inverse of the lowest frequency component of the heart rate variability chosen for analysis, comprising:

a heart activity data acquisition device adapted to acquire sequential data points of heart activity of a patient;

memory adapted to store sequential data points of heart activity in pre-acquired data files;

a user input for selecting between said acquisition device and a selected pre-acquired data file as a data source;

a processor adapted to

sequentially receive data points of heart activity data from said selected data source, over a period of time corresponding to the said time period of the heart activity,

determine QRS events from said data points as sequentially received,

output said QRS events as they are sequentially determined,

utilize nonlinear nonstationary methods to repeatedly determine one or more of a sympathetic index, a parasympathetic index, and a chaotic index of a selected group of determined QRS events as they are output,

determine a time-frequency distribution, wherein said determined time-frequency distribution is updated using the most recently output selected number of QRS events, and

for the most recently determined time-frequency distribution, determine spectral power in a low frequency range and its spectral power in a high frequency range; and

a display continuously updated during said period of time corresponding to the time period of the heart activity to display the most recently determined one or more sympathetic index, parasympathetic index, and chaotic index, the most recently determined time domain parameters, the most recently determined time-frequency distribution, the most recently determined spectral power in the low frequency range, and the most recently determined spectral power in the high frequency range.

15. The system of claim 14, wherein processor includes function calls for Fast Fourier Transforms and Inverse Fast Fourier Transforms.

16. The system of Claim 14, wherein said period of time selected is 30 seconds for humans.